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REMARKS

By this amendment, Applicant has amended the abstract to be in proper form and has amended the claims to eliminate the informalities noted by the Examiner in numbered sections 2-6 of the Office Action.

In view of foregoing amendments to the claims, reconsideration and withdrawal of the objection to the claims in sections 2-2.6 of the Office Action are requested.

In view of the foregoing amendments to the abstract, reconsideration and withdrawal of the objection to the abstract in numbered section 3 of the Office Action are requested.

Claims 1-13 stand rejected under 35 U.S.C. 101, the Examiner alleging the invention to be elected to be directed to nonstatutory subject matter. In support of this rejection, the Examiner alleges that the claimed method does not produce a concrete, tangible and useful result. Applicant traverses this rejection and request reconsideration thereof.

Applicant submits the claimed method in fact produces a useful, tangible and concrete result and, therefore, is directed to statutory subject matter. The tangible result requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. Manual of Patent Examining Procedure (MPEP) §2106 IV.C.2.(2)b). As described at page 1, lines 2-7 of Applicant's specification, the method allows to obtain the detailed composition of a fluid from the description by a reduced number of constituents. As noted at page 1, lines 15-22 of Applicant's specification, the invention is particularly useful for accelerating calculations during simulation of the production of underground hydrocarbon reservoirs. Such a model

allows reservoir engineers to reduce the time required for calculation of the behavior simulations of reservoirs under production while keeping good modeling of the exchange mechanisms between hydrocarbon phases, and to establish detailed compositional profiles, which are necessary in particular for projected dimensioning and management of surface installations, such as separators, treating plants, transport lines, etc., therefore useful for surface and process engineering. Clearly such a result is tangible and useful. It is immaterial whether the method is tied to a particular machine or apparatus or operates to changed articles or materials to a different state or thing. MPEP 2106. Accordingly, it is submitted the claimed method is statutory subject matter.

Claims 1 and 2 stand rejected under 35 U.S.C. 102(b) as allegedly being anticipated by U.S. Patent No. 6,212,488 to Meier et al. Applicant traverses this rejection and request reconsideration thereof.

The present invention relates to a lumping method for estimating the properties or the behavior of fluids comprising liquid and/or vapor hydrocarbon phases from data relative to a reference set consisting of hydrocarbon mixtures in a series of thermodynamic states resulting from determined conditions of production of an underground hydrocarbon reservoir. The method includes at least three steps. According to the method of the present invention, each one of the hydrocarbon mixtures is grouped into at least three constituents (V, I, H), none of these constituents corresponding to a particular selection of basic components or pseudo-components that would be used for a detailed compositional description of the fluids, considering that the gas phases resulting from separation under surface conditions of each one of the hydrocarbon mixtures or mixtures from which the third constituent (H) is excluded, and that the oil phase is resulting from the separation under surface

conditions of each one of the hydrocarbon mixtures or mixtures from which the first constituent (V) is excluded.

The method also includes determining, by material balance, the compositions of the separation products, comprising for the gaseous products, at least the first and the second constituent (V, I) in variable proportions and, for the liquid products, at least the second and third constituents (I, H) in variable proportions, and determining the at least three-constituent composition of each hydrocarbon mixture of the reference set by combination of the products of the separation thereof and the proportion to the amounts of each separation product.

The Meier et al. patent does not disclose at least the grouping step of the present invention. The Meier et al. patent discloses a predictive kinetic model for simulating fluid catalytic cracking of large hydrocarbon molecules having a lumping scheme that includes hydrocarbon descriptions based on boiling point distribution and chemical properties. The simulation results in a nearly continuous prediction of products as function of boiling point temperature. The lumping scheme defines a relatively large number of small fixed boiling-point range pseudo-components for describing product material, and a smaller number of larger boiling-point range pseudo-components for describing feed conversion and selectivity. The chemical properties for describing hydrocarbons include total hydrogen, aromatic carbon and aromatic hydrogen.

As evident from Figures 2 and 5 of Meier et al., which show, respectively, the reaction paths of the chemical kinetics for a five-lump reaction conversion and selectivity scheme and a graphic illustration of reaction product distribution predicted by computer simulation, the Meier et al. patent does not teach the lumping or grouping according to the three particular constituents V, I, H, as presently claimed.

While the Examiner refers to column 1, lines 55-67 of Meier et al., this section describes what is measured, not what is lumped. There is no link between the measured impurities and the three constituents V, I, H. It is submitting this section does not deal with the lumping method.

At page 8, lines 4-5 of the Office Action, it is indicated that "the examiner is mapping the property of *viscosity* to Applicants' V component...." However, V is not a property according to the present invention; rather, V is a constituent.

Table I of Meier et al. clearly indicates a number of components of 28 or 6. In addition, the chosen components in Meier et al. do not have the same properties as the ones set forth in claim 1.

Thus, the "grouping" step set forth in claim 1 is not disclosed in Meier et al. That is, the Meier et al. patent does not disclose grouping each of the hydrocarbon mixtures into at least three constituents (V, I, H) where none of the constituents correspond to a particular selection of base components or pseudo components that would be used for a detailed composition description of the fluids, considering that the gas phase is resulting from separation under surface conditions of each one of the hydrocarbon mixtures or mixtures from which third constituent (H) is excluded, and that oil phase is resulted from the separation under surface conditions of each one of the hydrocarbon mixtures or mixtures from which first constituent (V) is excluded.

Accordingly, the Meier et al. patent does not disclose the presently claimed invention.

Claims 3-11 and 13 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Meier et al. in view of U.S. Patent No. 6,108,608 to Watts, III. Applicant traverses this rejection and reconsideration thereof.

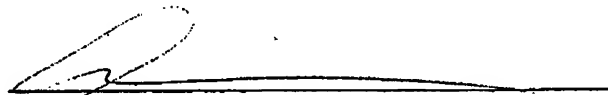
The deficiencies of Meier et al. are noted above. The Watts patent has been for its alleged teachings that the surface conditions are the conditions encountered or expected during reservoir production. However, clearly nothing in Watts remedies any of the basic deficiencies noted above with respect to Meier et al. Accordingly, claims 3-11 and 13 are patentable at least for the reasons noted above.

Applicant notes the indication of allowable subject matter in claim 12. However, in view of the foregoing amendments and remarks, it is submitted all of the claims now in the application are in condition for allowance.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Case: 612.43683X00), and please credit any excess fees to such deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP



Alan E. Schiavelli
Registration No. 32,087

AES/at
(703) 312-6600